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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/894,827	06/29/2001	Yuuichi Fukushige	Q64663	3721

7590 05/26/2006

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EXAMINER	
CHU, JOHN S Y	

ART UNIT	PAPER NUMBER
1752	

DATE MAILED: 05/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/894,827	FUKUSHIGE ET AL.	
	Examiner	Art Unit	
	John S. Chu	1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 February 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *22-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *22-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

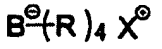
This Office action is in response to the RCE filed February 22, 2005.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 22-46 rejected under 35 U.S.C. 103(a) as being unpatentable over CUNNINGHAM et al. in view of GOTTSCHALK et al '942.

> 22. (currently amended): A photopolymerizable composition comprising:
>
> (a) a polymerizable compound having an addition-polymerizable unsaturated bond;
>
> (b) an organic dye; and
>
> (c) at least one kind of an organoboron compound represented by the following general formula (I) in a proportion of at least ~~one~~ four moles of organoboron compound per mole of the organic dye:
>
> General formula (I)
>
> 
>
> wherein R is selected from the group consisting of an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group, an aralkyl group, a substituted aralkyl group, an alkaryl group, a substituted alkaryl group, an alkenyl group, a substituted alkenyl group, an alkynyl group, a substituted alkynyl group, an alicyclic group, a substituted alicyclic group, a

heterocyclic group, a substituted heterocyclic group, and a derivative thereof; Rs may be the same as or different from each other; two or more of these groups may join together directly or via a substituent and form a boron-containing heterocycle; and X represents an alkali metal, quaternary ammonium, pyridinium, quinolinium, diazonium, morpholinium, tetrazolium, acridinium, phosphonium, sulfonium, oxosulfonium, iodonium, S, P, Cu, Ag, Hg, Pd, Fe, Co, Sn, Mo, Cr, Ni, As, or Se;

wherein the photopolymerizable composition further includes heat-responsive microcapsules comprising a color-forming component.

CUNNINGHAM et al discloses photopolymerizable compositions comprising a quinolinium dye compound, and a borate compound suitable as photoinitiators for the polymerizable composition. The quinolinium dye as disclosed in CUNNINGHAM et al meets the claimed ingredient (c) for the organoboron compound. Applicants are also directed to column 22, line 52 – column 25, line 24 where an ingredient [D] is taught by CUNNINGHAM et al wherein a UV absorber co-initiator may be used additionally in said photopolymerizable composition (col. 22, lines 52-55). Ingredient [D] is taught to be a cationic dyes to include rhodamine dyes (column 22, line 5-10), cyanine dyes (column 23, line 35), and coumarin compounds (column 24, lines 26-35). This disclosure clearly suggests and teaches the skilled artisan the use of alternative dyes to be added as coinitiators to the photopolymerizable composition of CUNNINGHAM et al '942 and still maintain the improved properties as disclosed. The amounts of the ingredient [D] is disclosed in column 22, lines 56-58 wherein the dye is in an amount of 0.001% - 20% especially 0.1% - 5% by weight. Thus at the extreme points, ingredient [D] would meet the claimed limitation as now recited wherein the

organoborate compound is in a propotion of at least four moles per mole of organic dye, if 0.001% of the dye is used in Example 34 and 35 wherein 0.4% of the organoborate compound is used in a working example.

CUNNINGHAM et al further discloses the additional provisions of their polymerizable composition as seen in column 35, lines 46-59 wherein the composition can be used in an image recording material having microcapsules and decolorizing image recording materials, etc. Thus the skilled artisan is directed to use the disclosed polymerizable composition in image recording materials having microcapsules.

CUNNINGHAM et al fails to explicitly disclose an image recording material using their disclosed photopolymerizable composition in an example and lack the use of ingredient [D] such as a cyanine dye as a co-initiators in the examples.

GOTTSCHALK et al '942 discloses a photohardenable composition suitable for the use in photosensitive materials, which form color images. These materials use three sets of microcapsules containing cyan-forming capsules, magenta-forming capsules and yellow-forming capsules. At least one of the aforementioned capsules further contain photohardenable composition including a dye-borate complex and a free radical addition polymerizable compound. The disclosure of GOTTSCHALK et al provides for a working example wherein the photohardenable compositions are incorporated in an image recording material having microcapsules. GOTTSCHALK et al lacks the specific dye-borate complex as claimed, however, his disclosure implicitly suggests the use of other dye-borate photointiators such as those taught in CUNNINGHAM et al.

It would have been *prima facie* obvious to one of ordinary skill in the art of photosensitive recording materials to use the borate compound as disclosed in column 51, line 1-44as a dye-borate photoinitiator in GOTTSCHALK et al and reasonably expect same or similar results with respect to rapid polymerization for the photosensitive recording materials. Secondly it would have been *prima facie* obvious to the skilled artisan seeing the various applications as disclosed in CUNNINGHAM et al for image recording materials to use the CUNNINGHAM et al photopolymerizable composition in an image forming material such as disclosed in GOTTSCHALK et al in the place of the photohardenable composition having a dye-borate complex and reasonable expect same or similar results with respect to having photopolymerizable compositions which are sensitive at longer wavelengths.

Thirdly, it would have been *prima facie* obvious to the skilled artisan to use ingredient [D], the coinitiator in an amount of 0.001% in Example 34 or 35 and reasonably expect same or similar results as disclosed in CUNNINGHAM et al for sensitivity at longer wavelengths, thus meet the claimed proportions as now claimed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Chu whose telephone number is (571) 272-1329. The examiner can normally be reached on Monday - Friday from 9:30 am to 6:00 pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Cynthia Kelly, can be reached on (571) 272-1526

The fax phone number for the USPTO is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application lnformation Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PMR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

John S. Chu
Primary Examiner, Group 1700

J.Chu
May 24, 2006